

Patent
Attorney Docket No. 015290-755

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Michael SETTON

Group Art Unit: 2812

Application No.: 10/622,484

Examiner: Unassigned

Filing Date: July 21, 2003

Confirmation No.: 4980

Title: ULSI MOS WITH HIGH DIELECTRIC CONSTANT GATE INSULATOR

FIRST
INFORMATION DISCLOSURE STATEMENT
TRANSMITTAL LETTER

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

Enclosed is a FIRST Information Disclosure Statement and accompanying form PTO-1449 for the above-identified patent application.

- No additional fee for submission of an IDS is required.
- The fee of \$180.00 (1806) as set forth in 37 C.F.R. § 1.17(p) is also enclosed.
- A statement under 37 C.F.R. § 1.97(e) is also enclosed.
- A statement under 37 C.F.R. § 1.97(e), and the fee of \$180.00 (1806) as set forth in 37 C.F.R. § 1.17(p) are also enclosed.
- Charge _____ to Deposit Account No. 02-4800 for the fee due.
- A check in the amount of _____ is enclosed for the fee due.

The Director is hereby authorized to charge any appropriate fees under 37 C.F.R. §§ 1.16, 1.17 and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 02-4800. This paper is submitted in duplicate.

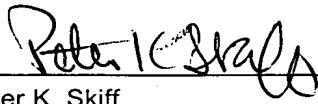
Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

P.O. Box 1404
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Date: 2/17/04

By


Peter K. Skiff
Registration No. 31,917



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of)
Michael SETTON) Group Art Unit: 2812
Application No.: 10/622,484) Examiner: Unassigned
Filed: July 21, 2003) Confirmation No.: 4980
For: ULSI MOS WITH HIGH DIELECTRIC)
CONSTANT GATE INSULATOR)

FIRST INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the duty of disclosure as set forth in 37 C.F.R. § 1.56, the accompanying information is being submitted in accordance with 37 C.F.R. §§ 1.97 and 1.98.

Pursuant to 37 C.F.R. § 1.98, a copy of each of the documents cited is enclosed. However, copies of the listed U.S. patents are not enclosed since it is no longer required according to the July 11, 2003 waiver of the requirement for copies of cited U.S. patents and U.S. patent application publications in national patent applications filed after June 30, 2003 and international applications entering the national stage under 35 U.S.C. § 371 after June 30, 2003.

The documents are being submitted within three (3) months of the filing or entry of the national stage of this application or before the first Office Action on the merits, whichever is later. Since these documents are being filed within the time period set forth in 37 C.F.R. § 1.97(b), no fee or statement is required.

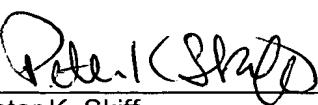
To assist the Examiner, the document is / documents are listed on the attached form PTO-1449. It is respectfully requested that an Examiner initialed copy of this form be returned to the undersigned.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

Date 2/17/04

By:


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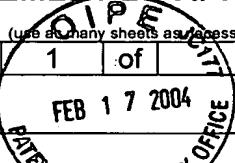
**FIRST
INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

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Sheet

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<i>Complete if Known</i>	
Application Number	10/622,484
Filing Date	July 21, 2003
First Named Inventor	Michael SETTON
Examiner Name	Unassigned
Attorney Docket Number	015290-755

**U.S. PATENT DOCUMENTS**

Examiner Initials	Document Number	Kind Code (if known)	Name of Patentee or Applicant of Cited Document	Issue/Publication Date (MM-DD-YYYY)
	3,731,163		Shukus	05-1993
	4,670,355		Matsudaira	06-1987
	4,734,340		Saito et al.	03-1988
	5,091,763		Sanchez	02-1992
	5,189,503		Suguro et al.	02-1993
	5,292,673		Shinriki et al.	03-1994
	5,316,977		Kunishima et al.	05-31-1994
	5,596,214		Endo	01-1997
	5,677,015		Hasegawa	10-1997
	5,688,724		Yoon et al.	11-1997
	5,702,972		Tsai et al.	12-1997
	6,107,656		Igarashi	08-2000

FOREIGN PATENT DOCUMENTS

Examiner Initials	Document Number	Kind Code (if known)	Country	Date of Publication (MM-DD-YYYY)	Translation	
					Yes	No
	0844647	A3	EPO	05-1998		
	60-107838		JAPAN	06-13-1985		

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
	Alers, G.B. et al., "Nitrogen plasma annealing for low temperature Ta ₂ O ₅ films", Applied Physics Letters, vol. 72, no. 11, 1308-1310, 16 March 1998
	Campbell, S.A., et al., "MOSFET Transistors Fabricated with High Permittivity TiO ₂ Dielectrics, IEEE Transactions on Electron Device, Vol. 44, No. 1, 104-109, January 1997.
	Cava, R.F. et al., "Enhancement of the dielectric constant of Ta ₂ O ₅ through substitution with TiO ₂ ", Nature, Vol. 377, 215-217, 21 September 1995
	Chatterjee, A. et al., "Sub-100nm Gate Length Metal Gate NMOS Transistors Fabricated by a Replacement Gate Process", IEEE, 1997
	Gan, J.-Y et al., "Dielectric property of (TiO ₂) _x -(Ta ₂ O ₅) _{1-x} thin films", Appl. Phys. Lett. 72 (3), 19 January 1998, 332-334
	Hu, J.C. et al., "Feasibility of Using W/TiN as Metal Gate for conventional 0.13μm CMOS Technology and Beyond", IEEE, 1997

Examiner Signature	Date Considered
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EXAMINER: Initial if reference considered, whether or not citation is in conformance with M.P.E.P. § 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

Complete if Known

**FIRST
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STATEMENT BY APPLICANT**

(use as many sheets as necessary)

Sheet	2	OF	2	Attorney Docket Number	015290-755
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NON-PATENT LITERATURE DOCUMENTS

Examiner Initials	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
	Joshi, P.G., et al., "Structural and electrical properties of crystalline (1 - x) Ta ₂ O ₅ - xAl ₂ O ₃ thin films fabricated by metalorganic solution deposition technique", Appl. Phys. Lett. 71 (10), 8 September 1997, 1341-1343
	Lo, G.Q. et al., "Metal-oxide-semiconductor characteristics of chemical vapor deposited Ta ₂ O ₅ films, Appl. Phys. Lett. 60 (26), 3286-3288, June 1992.
	Meng, J.F., et al., "Raman Investigation on (Ta ₂ O ₅) _{1-x} (TiO ₂) _x System at Different Temperatures and Pressures", J. Phys. Chem Solids, Vol. 58, No. 10, 1503-1506, 1997
	Momiyama, Y., et al., "Ultra-Thin Ta ₂ O ₅ /SiO ₂ Gate Insulator with TiN Gate Technology for 0.1μm MOSFETs", 1997 Symposium on VLSI Technology digest of Technical Papers
	Properties of Metal Silicides, INSPEC emis datareviews series No. 14, 1995, Maex and Van Rossum Editors, pp 103-104
	Ting, C.Y., et al., "Gate Materials Consideration for Submicron CMOS", Applied Surface Science 38 (1989) 416-428
	Ushiki T., et al., "High-Performance, Metal-Gate SOI CMOS Fabricated by Ultraclean, Low-Temperature Process Technologies", SPIE, Vol. 2875, pp 28-38, Aug. 1996
	Vogel, E.M., et al., "Modeled Tunnel Currents for High Dielectric constant Dielectrics", IEEE Transactions on Electron Devices, Vol. 45, No. 6, 1350-1355, June 1998.
	Pratt, I.H., "Thin-Film Dielectric Properties of R.F. Sputtered Oxides", Solid State Technology, (Dec. 1969), vol. 12, no. 12, 49-57
	Reddy, P.K, et al., "Dielectric Properties of Tantalum Oxynitride Films", Physica Status Solidi A, July 1979, vol. 54, no. 1, pages K63-K66
	Vlasov, Y.G. et al., "Analytical applications of pH-ISFETs", Sensors and Actuators B, (Dec. 1992) vol. B10, No. 1, pages 1-6.
	Patent Abstracts of Japan, vol. 098, no. 011, September 1998, JP 10 178170A
	Chinese Official Action dated April 18, 2003 for Application No. 99808151.5

Examiner Signature	Date Considered	
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